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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,033	01/16/2001	Yang Gao	10508/998RSS366	4236

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EXAMINER

JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/761,033

Applicant(s)

GAO, YANG

Examiner

Jakieda R Jackson

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on March 12, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-47 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. In response to the Office Action mailed November February 3, 2004, applicant submitted an Amendment filed on March 12, 2004, in which applicant's arguments with respect to claims 28-47 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 32 and 42** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "around five peaks and gains" is vague and indefinite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 28-30 and 38-40** are rejected under 35 U.S.C. 102(e) as being anticipated by Oshikiri et al. (U.S. Patent No. 6,470,310), hereinafter referenced as Oshikiri.

Regarding **claims 28 and 38**, Oshikiri discloses a method and an encoder for encoding a speech signal (column 1, lines 11-15), said method and encoder comprising:

processing (process) said speech signal (speech signal) to generate a plurality of frames (plurality of frames), wherein each of said plurality frames includes a plurality a subframes (plurality of subframes; column 3, lines 64 –66);

coding a previous subframe of said plurality of subframes (encoding a plurality of subframes; column 4, lines 14-20) using Code-Excited Linear Prediction (CELP; column 1, lines 3-25) to generate a previous excitation signal (past excitation signal; column 8, lines 29-32); and

applying short term enhancement (column 5, lines 25-32) using said previous excitation signal (previous subframe) to enhance a current excitation signal for a current subframe (present subframe; column 5, line 65 – column 6, line 2).

Regarding **claims 29 and 39**, Oshikiri discloses a method and an encoder wherein said short term enhancement (subframe is short) is achieved by using a main pulse (pitch period) from said previous subframe (previous subframe), to generate one or more short term enhancement pulses based on short term correlation (correlation) between said previous subframe (previous subframe) and said current subframe (adjacent subframes; figure 2 with column 3, lines 11-15 and column 7, lines 18-39).

Regarding **claims 30 and 40**, Oshikiri discloses a method and an encoder wherein said main pulse (pitch period) is generated by said coding previous subframe (decoding speech of previous subframe; column 5, lines 25-32).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 31, 33-36, 41 and 43-46** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshikiri in view of Akamine et al. (U.S. Patent No. 5,265,167), hereinafter referenced as Akamine.

Regarding **claims 31 and 41**, Oshikiri discloses a method and an encoder for encoding a speech signal (column 1, lines 11-15), but lacks the method and encoder wherein said short term enhancement is achieved by weighting said previous excitation signal by a current weighting filter to estimate correlation peaks at a distance within said current subframe.

Akamine discloses the method and encoder wherein said short term enhancement is achieved by weighting said previous excitation signal (excitation signal generator; figure 19, element 17) by a current weighting filter (weighting filter; figure 19, elements 51 and 52), to estimate correlation peaks at a distance within said current subframe.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oshikiri's invention such that it weighs the previous excitation signal by a current weighting filter, to reduce that amount of calculations required for coding the pulse train of the excitation signal while maintaining the performance (column 19, lines 10-14).

Regarding **claims 33 and 43**, Oshikiri discloses a method and an encoder for encoding a speech signal, but lacks the method wherein said current excitation signal is constructed using the recited equation.

Akamine does not specifically disclose the method wherein said current excitation signal is constructed using the recited equation. However, these formulas are well-known obvious variants of Akamine's equation 37 (column 14, line 61 – column 15, line 9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oshikiri's invention such that it discloses the recited equation, to decode and compress a signal with high efficiency and to maintain a low transfer bit rate based on a train of excitation pulses (column 1, lines 10-16).

Regarding **claims 34 and 44**, Oshikiri discloses a method and an encoder for encoding a speech signal, but lacks the method wherein gains and distances are calculated by maximizing correlations of previous excitation signals in a weighted speech domain.

Akamine discloses a method wherein gains (gain) and distances (length; column 14, lines 61-68) are calculated by maximizing correlations (column 21, lines 23-32) of previous excitation signals (previous frame) in a weighted speech domain (column 3, lines 14-20 with column 12, lines 34-44), to reduce the amount of calculations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oshikiri's invention such that the gains and distances are calculated by maximizing correlations of previous excitation signals in a weighted speech domain, to provide a speech coding apparatus capable of providing high-quality synthesized speech at a low transfer rate (column 4, lines 24-27).

Regarding **claims 35 and 45**, Oshikiri discloses a method and an encoder for encoding a speech signal, but lacks the method wherein short term enhancement pulses are generated by performing a convolution operation $P(n)$ with said previous excitation signal.

Akamine discloses the method wherein short term enhancement pulses (figure 19 with pulse train approximately $\frac{1}{2}$; column 19, lines 8-14) are generated by performing a convolution operation $P(n)$ (convolution sum) with said previous excitation signal (previous frame; column 9, line 56 – column 10, line 6 and column 19, lines 53-63), to calculate the perceptual-weighted error signal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oshikiri's invention such that it generates short term enhancement pulses by performing a convolution operation, to reduce the amount of calculations needed, which allows the practical use of the device to be further facilitated and efficient (column 19, lines 63-68).

Regarding **claims 36 and 46**, Oshikiri discloses a method and an encoder for encoding a speech signal, but lacks the method wherein the short term enhancement utilizes pitch lag information.

Akamine discloses the method wherein the short term enhancement (column 25, lines 52-55) utilizes pitch lag information (column 30, lines 21-24 and column 31, lines 6-14), to reduce that amount of calculations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oshikiri's invention such that the short term enhancement utilizes pitch lag information, to reduce the amount of calculations needed, which allows the practical use of the device to be further facilitated and efficient (column 19, lines 63-68).

8. **Claims 37 and 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshikiri in view of Akamine in further view of Su (U.S. Patent No. 6,014,622).

Regarding **claims 37 and 47**, Oshikiri in view of Akamine discloses a method and an encoder for encoding a speech signal, but lacks the method wherein said pitch lag and gain from said previous subframe are scaled and added to said current subframe to enhance an amount of data used to describe said current excitation signal.

Su discloses the method wherein said pitch lag (pitch lag) and gain (gain) from said previous subframe (previous pitch interval) are scaled (scale) and added to (added to) said current subframe (the excitation signal) to enhance an amount of data used to describe said current excitation signal (extraction of the "best" excitation signal; column 1, lines 43-51 with column 1, line 63 – column 2, line 3 and column 3, lines 20-60), to guarantee efficient quality of the output speech.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oshikiri's invention wherein said pitch lag and gain from said previous subframe are scaled and added to said current subframe, to provide a scheme for a very low bit rate coding of pitch lag extraction process, applicable to a variety of speech coding arrangements (column 3, line 64 – column 4, line 5).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Benyassine et al. (U.S. Patent No. 6,636,829) discloses a speech communication system and method for handling lost frames.
- Gersho et al. (U.S. Patent No. 6,311,154) discloses an adaptive window for analysis-by-synthesis CELP-type speech coding.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R Jackson whose telephone number is 703.305.5593. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703. 305.4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ
May 24, 2004



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